Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_\_\_\_

Conversions with Scientific Notation

Numbers can be written in standard form and in scientific notation.

**Standard Form:** 5,200,000,000,000

**Scientific Notation:** 5.2 × 1012

Numbers written in scientific notation are made up of three parts:

**5.2 × 1012**

**Coefficient**

**Exponent**

**Base**

***Examples***: Tell whether each number is written correctly in scientific notation. If it is incorrectly written, **state the reason**.

1. A horse chestnut has a diameter of about 2 ∙ 100 centimeters.
2. Neptune is about 4.488 ∙ 109 kilometers from the sun.
3. The approximate wavelength of infrared light is 0.01 ∙ 10-5 meters.
4. A football field (excluding end zones) is 10 ∙ 101 yards long.

***Examples:*** Write each number in scientific notation.

427.7 35560020.3 45000000000000

***Examples:*** Write each number in standard form.

7.1 ∙ 103 8 ∙ 106 6.33 ∙ 107

***Comparing Lengths***

The blue whale is the largest animal in the world. Blue whales can grow up to about 1320 inches (110 feet). The average height of the American male is 69.5 inches (5 feet 9.5 inches). The blue whale may be the largest animal in the world, but on land the elephant is the largest animal. Elephants can grow up to 156 inches long (13 feet).

1. Use the height of the average man and the length of the blue whale. How many times as large as the man is the whale? Write your answer in scientific notation.
2. Use the height of the average man and the length of the elephant. How many times as large as the man is the elephant? Write your answer in scientific notation.